

Online appendix
“Policy Choices in Assembly versus Representative Democracy:
Evidence from Swiss Communes”

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September 20, 2019

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1 Data appendix

1.1 The switcher sample

To gather information on the institutional history of Switzerland's 1,821 communes in cantons granting autonomy over the choice of local legislative form, we sent an e-mail with a link to an online survey to municipal secretaries on April 27 2011. We asked for information about the organization of the legislative power since 1945, but also for other institutional information such as the introduction of women suffrage at local level and the presence of initiative and referendum rights and corresponding changes since 1945. After sending reminder e-mails and calling 1,120 communes, we obtained a survey response rate (complete or partial) of 48.6% for our study cantons (see Table 1 below).

Out of 881 communes that responded to our survey, there were 32 that had changed the form of their legislative power between 1945 and 2010. For 25 switchers, we had all the necessary information (year of the switch), because they had completed the relevant survey module. For 7 communes, we were missing the precise year of the switch. To gather this missing information, we checked available local constitutions or called up the commune secretaries. For the 51.4% of non-responders and another 129 respondents that only gave the current status of the legislative power, we complement our analysis with previous surveys conducted by political scientists. In four different waves (1988, 1994, 1998 and 2005), Professor Ladner and his team elicited detailed information on the political structure (including legislative form) of local governments.

The basis for all merges is a commune's Bundesamt für Statistik (BfS) code in 2011. To combine our survey data with the Ladner surveys, we had to account for the possibility that a commune had a different name or BfS number in earlier years. We constructed a master dataset that recorded each commune's historical names and BfS numbers for each year of the Ladner surveys. If there was a merger (e.g. in Willisau), we had to check responses of the pre-merger communes (Willisau Land and Willisau Stadt) in earlier surveys. As both Willisau Land and Willisau Stadt reported to never have had a parliament, and Willisau in our survey also reported to have an assembly, we assume that the commune Willisau (as defined by the 2011 BfS code) always had an assembly.

As shown in Table 1 below, response rates in these Ladner surveys were high. Most important

for us is that for communes that filled out all the Ladner surveys, we can reconstruct the entire institutional history between 1945 and 2005. The reason is that the surveys did not only inquire about the current state of the legislative but also about past attempts to change the form of the legislative power. As such, if a commune answered in the 1988 survey that it had an assembly and no effort had been undertaken to introduce a parliament in the past, we can assume that they had an assembly all the way back to 1945.

As a last source of information, we used cantonal administrative information wherever available. For the canton Fribourg, we know the communes with a parliament today (15), and also the year it was introduced. For the cantons Aargau, Valais and Zürich, we also obtained a list of all communes that have ever had a parliament. Since we did not know the year in which the parliament was introduced (and/or potentially abolished), we checked the websites for these communes or called them up to get this missing information. Combining these three data sources, we identified 77 switcher communes. How large is the risk that we missed some switchers?

For cantons Aargau, Valais and Zürich (which, with a total of 532 communes, account for 30% of all communes), there is no risk of having missed a switcher. As mentioned above, we obtained a list of all communes that have ever had a parliament and determined the year of the switch by either checking their websites or calling up the switcher communes.

For the canton Fribourg, we know the legislative history with certainty for a bit more than half of the communes (86 out of 167). The reason is that either these communes have a parliament today (and we know when it was introduced), or we know the entire legislative history from our or the Ladner surveys. For 16 communes, we also know that having a parliament was not permitted by law, as their size was smaller than 600 inhabitants (see “loi sur les communes”, canton Fribourg). This leaves us with a remainder of 65 communes. For 54 of these, we know that they have no parliament today, they did not have a parliament in 1988 and before (because they filled out the Ladner survey in 1988), and they did not have a parliament in at least one of the years 1994, 1998, and 2005. As such, we are confident not to have missed any switchers. Only for 11 communes, we do not know the institutions earlier on, as they did not fill out the 1988 Ladner survey, and neither our survey completely. An extensive online search did not provide any evidence that there ever was a parliament in these communes. In sum, we expect no missing switchers from canton Fribourg.

For the other ten sample cantons (1,122 communes in total), we have certainty about the institutional history for 970 communes, either because they completely filled out our own survey, they filled out the Ladner surveys, or because we checked their legislative history individually through their websites or by phone. For all but three of the remaining communes we have some information from the surveys and did not detect any switches. While it is theoretically possible that there were (back and forth) switches between survey rounds, we consider this quite unlikely.

1.2 Local budgetary data for the switcher sample

Getting time-series data on expenditures for the switcher communes between 1945 and 2010 turned out to be a cumbersome task. Standardized data in electronic format was only available for a subset of cantons and only for more recent years (starting from 1980 or 1990). We therefore proceeded to collect the budgetary data from individual communal archives. This required first contacting each of the 77 sample communes, to ask for access to their local archives, and then to make all the necessary arrangements for the archive visit. This process often involved several steps, and in some cases even involved formal requests to the local executive body, as access to the archive was first denied. Arrangements were made with the head of the financial department, the municipal secretary, or the municipal archivist. The efforts required for reviewing the documents varied by commune and depending on canton-specific transparency laws. In the end, we managed to get access to every single communal archive in our switcher sample.

We collected data on total revenue and total expenditure, as well as expenditures broken down by spending category. This so-called functional division classifies expenditure items by the service categories carried out by the commune. Harmonizing the categories for functional expenditure over time and across communes was a major challenge. By 2010, the financial accounting systems of cantons and communes were largely standardized according to the Harmonized Accounting Model (HAM-1) and applied all over Switzerland (most communes adopted the HAM-1 in the 1980s). Under the HAM-1, spending is sub-divided into 10 spending-categories: “Administration”, “Law Enforcement”, “Education”, “Culture and Leisure”, “Social Welfare”, “Traffic”, “Environmental and Spatial Planning”, “Economy”, and “Finances”. In earlier years, however, accounting systems varied across cantons and time, and even slightly within cantons.

To be as consistent as possible, we proceeded as follows: (a) If the sub-division in the raw data for earlier years was more detailed than under the later HAM-1, we aggregated the items into the corresponding HAM-1-category, as close as possible in line with official guidelines. To make a concrete example, in earlier years, instead on having one single category for law enforcement (Öffentliche Sicherheit in German), many communes had separate spending categories for police, military, firefighters, and civil protection (Zivilschutz). We therefore defined spending for law enforcement for earlier years as the sum of the spending categories for police, military, firefighters and civil protection.

(b) If the data were more aggregated than the HAM-1 (e.g. “Education and Culture” earlier, “Education” and “Culture and Sports” later, we assigned the earlier joint category (“Education and Culture”) to the later spending category that was quantitatively more important (“Education” in this case). For example, in the commune Olten, there was a category “Education” until 1971, a category “Education and Culture” until 1985, and two separate categories “Education” and “Culture and Leisure” afterwards. In 1987, the amount for education spending was 16,833,975 CHF, whereas the amount for Culture and Leisure was 4,234,232 CHF. As the amount for Culture and Leisure was much lower than that for Education, we assigned the joint category “Education and Culture” to Education Spending, and put missing values for the earlier years of “Culture and Leisure”. In rare cases, the later disaggregated spending categories were not very different in size. Here, we just assigned missing values for the earlier years. As a concrete example, there were some communes in canton Graubünden (e.g. Grono) with a joint category “Police and Health”, from 1958 to 1988. Since no sub-category was clearly more important than the other, we assigned missing values for earlier years to both spending categories, “Health” and “Law Enforcement”.

(c) In the years prior to HAM-1, it was generally not possible to sharply disentangle the two HAM-1-categories “Traffic” and “Environment and Spatial Planning”, but we could at least identify the items that would correspond to either of the two under the HAM-1. We summarized all these items by the single meta-category “Traffic and Environment”, which simply became the sum of the two HAM-1-categories from the 1980s.

In addition to harmonizing the budget categories, we also coded every change in the commune’s accounting system and control for these structural breaks using dummy variables.

Table 1: Response rates to our survey and four previous surveys in sample cantons

	Legislative Survey (2011)		Ladner 1988	Ladner 1994	Ladner 1998	Ladner 2005	Responded to none of the five surveys
	# Communes	Response Rate	Response Rates				
Aargau (AG)	220	0.56	0.93	0.72	0.83	0.83	2
Bern (BE)	383	0.61	0.86	0.70	0.91	0.86	1
Basel-Landschaft (BL)	86	0.49	0.90	0.64	0.90	0.88	0
Freiburg (FR)	167	0.28	0.75	0.69	0.83	0.79	5
Graubünden (GR)	178	0.48	0.77	0.74	0.82	0.74	3
Jura (JU)	64	0.39	0.88	0.78	0.84	0.89	0
Luzern (LU)	87	0.46	0.80	0.68	0.89	0.79	1
St. Gallen (SG)	85	0.52	0.86	0.78	0.88	0.80	0
Schaffhausen (SH)	27	0.48	0.91	0.62	0.91	0.97	0
Solothurn (SO)	121	0.37	0.81	0.69	0.81	0.79	0
Thurgau (TG)	80	0.46	0.65	0.43	0.73	0.81	1
Wallis (VS)	141	0.38	0.77	0.66	0.88	0.76	1
Zug (ZG)	11	0.55	0.82	0.82	0.73	0.91	0
Zürich (ZH)	171	0.50	0.94	0.77	0.83	0.79	1
Total	1,821	0.48					15

Notes: The table shows the response rate to our legislative survey, as well as to the four Ladner surveys. The last column shows the number of communes that have not responded to any of the five surveys.

Table 3: Impact estimates on ln(spending per capita) from a hypothetical reform 10 years prior to the actual switch from assembly to parliament

	A. ln(total spending per capita)	B. ln(administrative spending per capita)	C. ln(education spending per capita)	D. ln(welfare spending per capita)	E. ln(law enforcement spending per capita)	F. ln(traffic/environment spending per capita)			
Placebo Parliament (0/1)	0.013 (0.051)	-0.013 (0.047)	-0.010 (0.046)	0.006 (0.070)	0.012 (0.057)	0.027 (0.054)	0.005 (0.049)	0.013 (0.046)	0.005 (0.041)
Observations	2,040	2,040	2,040	2,066	2,066	2,066	1,853	1,853	1,853
R-squared	0.85	0.90	0.91	0.82	0.88	0.88	0.90	0.93	0.94
Placebo Parliament (0/1)	0.041 (0.075)	0.152** (0.062)	0.117** (0.058)	-0.142 (0.105)	-0.011 (0.068)	-0.012 (0.065)	0.043 (0.082)	0.013 (0.069)	0.007 (0.070)
Observations	1,705	1,705	1,705	1,705	1,705	1,705	1,988	1,988	1,988
R-squared	0.79	0.87	0.87	0.75	0.85	0.86	0.74	0.83	0.84
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Commune fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Population	Y	Y	Y	Y	Y	Y	Y	Y	Y
Other covariates	Y	Y	Y	Y	Y	Y	Y	Y	Y
Commune linear trend	N	Y	Y	N	Y	Y	N	Y	Y
Structural break dummies	N	N	Y	N	N	Y	N	N	Y

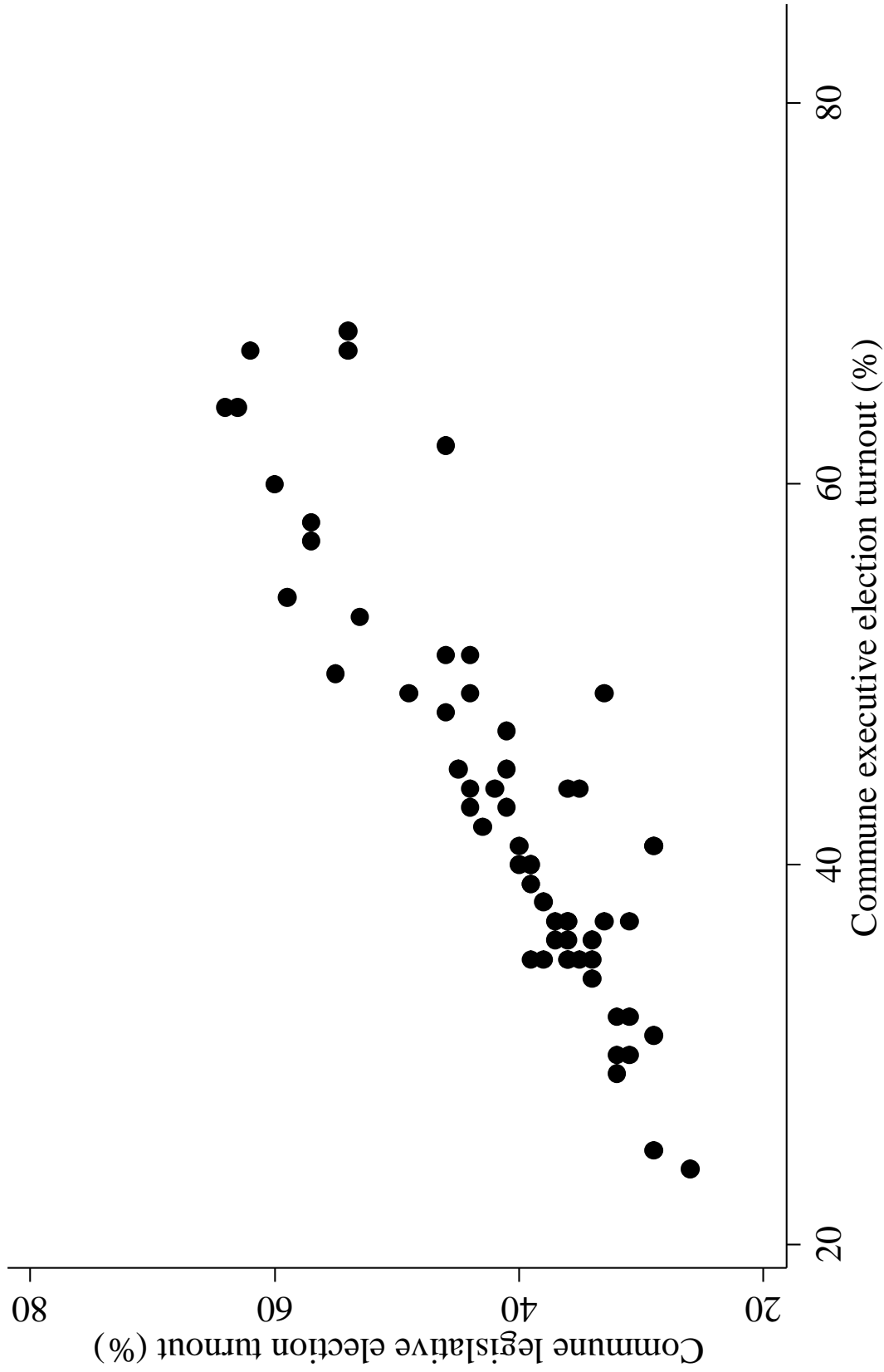
Notes: OLS estimations. The unit of observation is a commune-year. The sample period is from 1945 to 2010. The number of communes is 77. Commune-level-clustered standard errors are in parentheses. Placebo parliament equals 1 in the 10 years prior to actual parliament introduction and 0 in even earlier years. Post-adoption commune-years are excluded from the sample. Population adds linear and quadratic terms in resident population to the regression. Other covariates are: labor force participation, share of 20- to 39-year-old residents, share of 40- to 64-year-old residents, share of at least 65-year-old residents, share of foreigners and an indicator for commune-level woman suffrage. The coding of structural break dummies is described in the main text. (***, **, and *) denote significance at the 1 percent, 5 percent and 10 percent levels, respectively.

Table 4: Impact estimates on ln(spending per capita) adding covariates one-by-one

A. ln(total spending per capita)							
Parliament (0/1)	0.054 (0.044)	0.065 (0.044)	0.053 (0.044)	0.048 (0.045)	0.054 (0.041)	0.055 (0.044)	0.072* (0.043)
R-squared	0.91	0.91	0.91	0.91	0.91	0.91	0.91
B. ln(administrative spending per capita)							
Parliament (0/1)	0.087* (0.052)	0.128** (0.050)	0.090* (0.053)	0.072 (0.053)	0.076 (0.053)	0.088* (0.052)	0.122** (0.052)
R-squared	0.86	0.87	0.86	0.86	0.86	0.86	0.88
C. ln(education spending per capita)							
Parliament (0/1)	0.124*** (0.061)	0.125** (0.061)	0.123** (0.060)	0.115* (0.062)	0.115** (0.056)	0.125** (0.061)	0.126** (0.058)
R-squared	0.92	0.92	0.92	0.92	0.93	0.92	0.93
D. ln(welfare spending per capita)							
Parliament (0/1)	0.018 (0.066)	0.009 (0.065)	0.008 (0.067)	0.026 (0.064)	-0.009 (0.061)	0.016 (0.066)	-0.003 (0.062)
R-squared	0.97	0.97	0.97	0.97	0.97	0.97	0.97
E. ln(law enforcement spending per capita)							
Parliament (0/1)	0.053 (0.053)	0.019 (0.049)	0.047 (0.055)	0.085 (0.055)	0.062 (0.054)	0.054 (0.053)	0.043 (0.049)
R-squared	0.97	0.97	0.97	0.97	0.97	0.97	0.97
F. ln(traffic/environment spending per capita)							
Parliament (0/1)	-0.031 (0.069)	-0.039 (0.069)	-0.040 (0.067)	-0.029 (0.068)	-0.021 (0.066)	-0.031 (0.069)	-0.021 (0.066)
R-squared	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Population	N	Y	N	N	N	N	Y
Labor force participation	N	N	Y	N	N	N	Y
Share foreigners	N	N	N	Y	N	N	Y
Demographics	N	N	N	N	Y	N	Y
Women suffrage	N	N	N	N	N	Y	Y

Notes: OLS estimations. The unit of observation is a commune-year. The sample period is from 1945 to 2010. The number of communes is 77. Commune-level-clustered standard errors are in parentheses. All specifications include year and commune fixed effects, commune linear trends and structural break dummies as described in the main text. Population adds linear and quadratic terms in resident population to the regression. Demographics adds the share of 20- to 39-year-old residents, share of 40- to 64-year-old residents and share of at least 65-year-old residents. (***, **, and *) denote significance at the 1 percent, 5 percent and 10 percent levels, respectively.

Figure 1: Legislative and executive election turnout in switcher communes



Notes: Switcher sample communes with a parliament in 2010. Election year varies from 2010 to 2014.

Figure 2: Distribution of years from switch to parliament

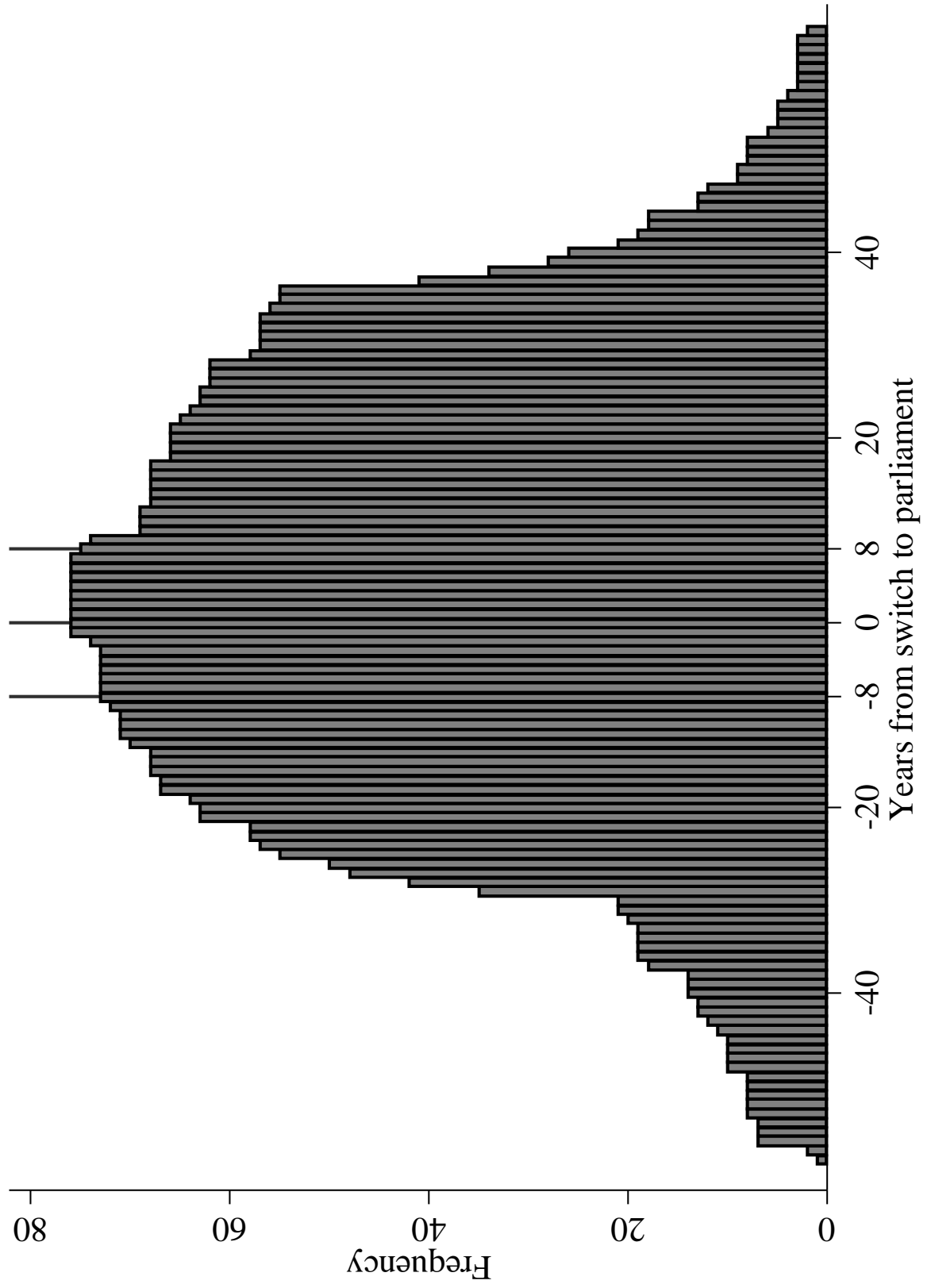
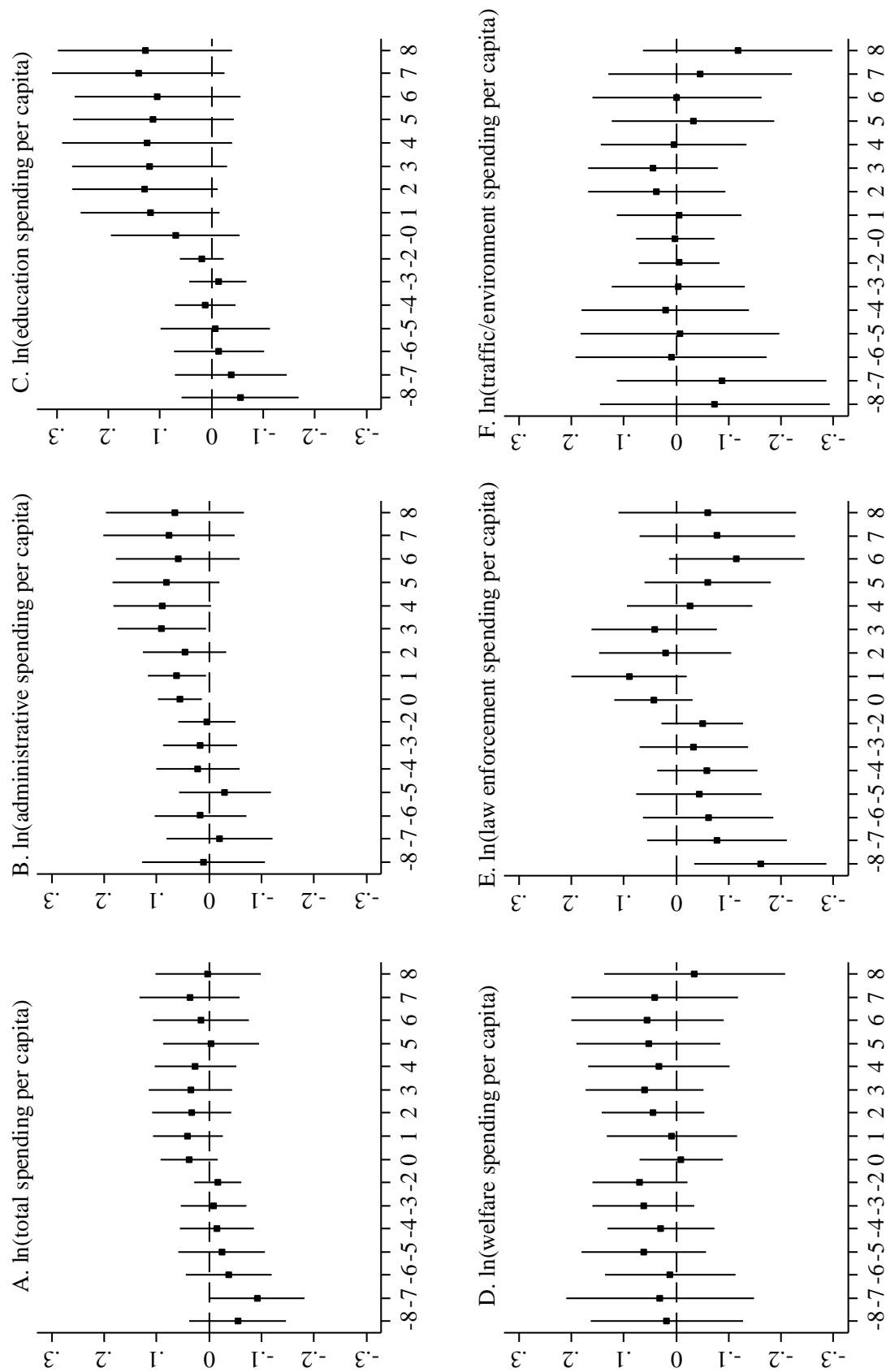
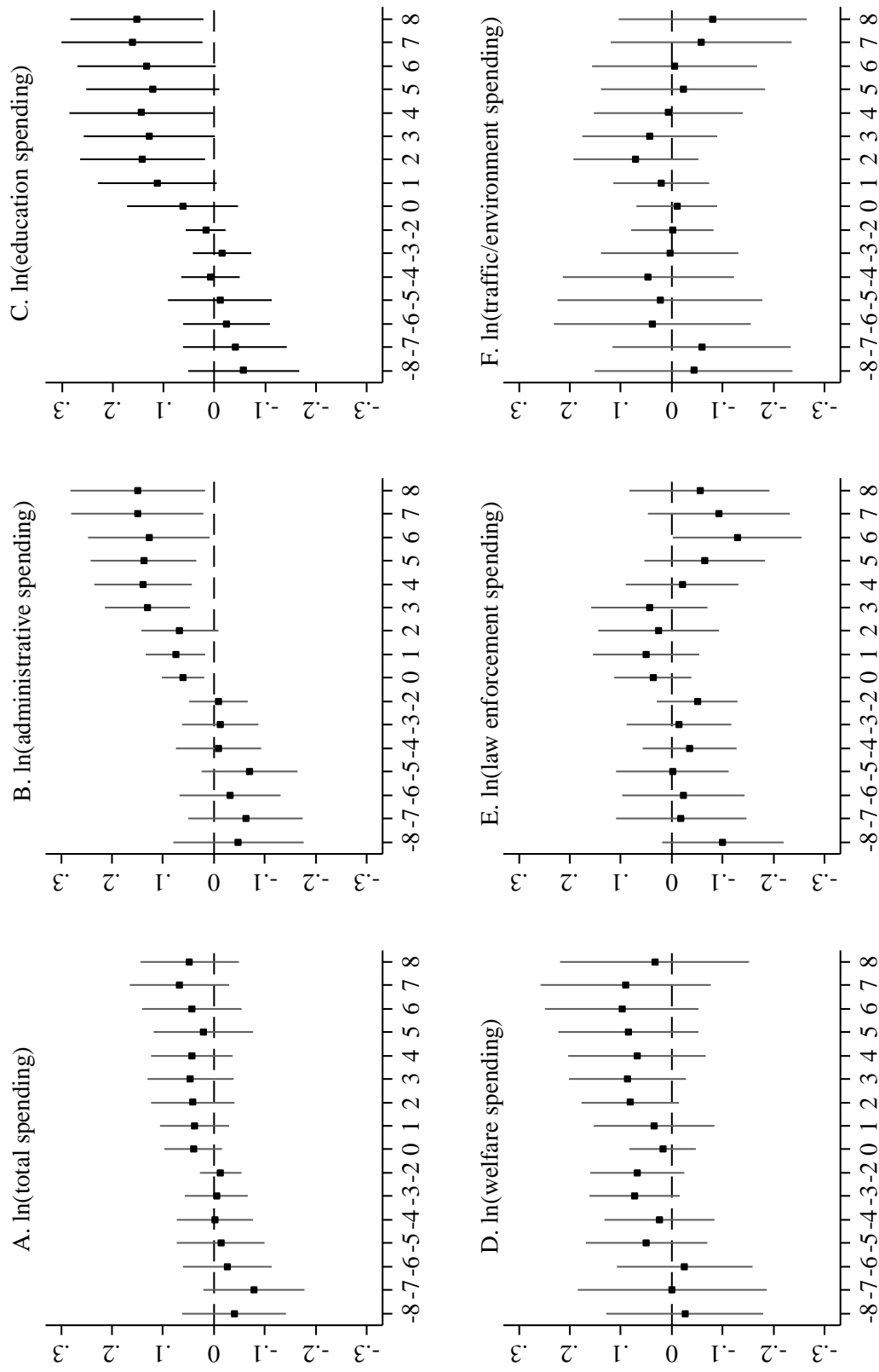


Figure 3: Event study impact estimates on ln(spending per capita), fixed effects-only



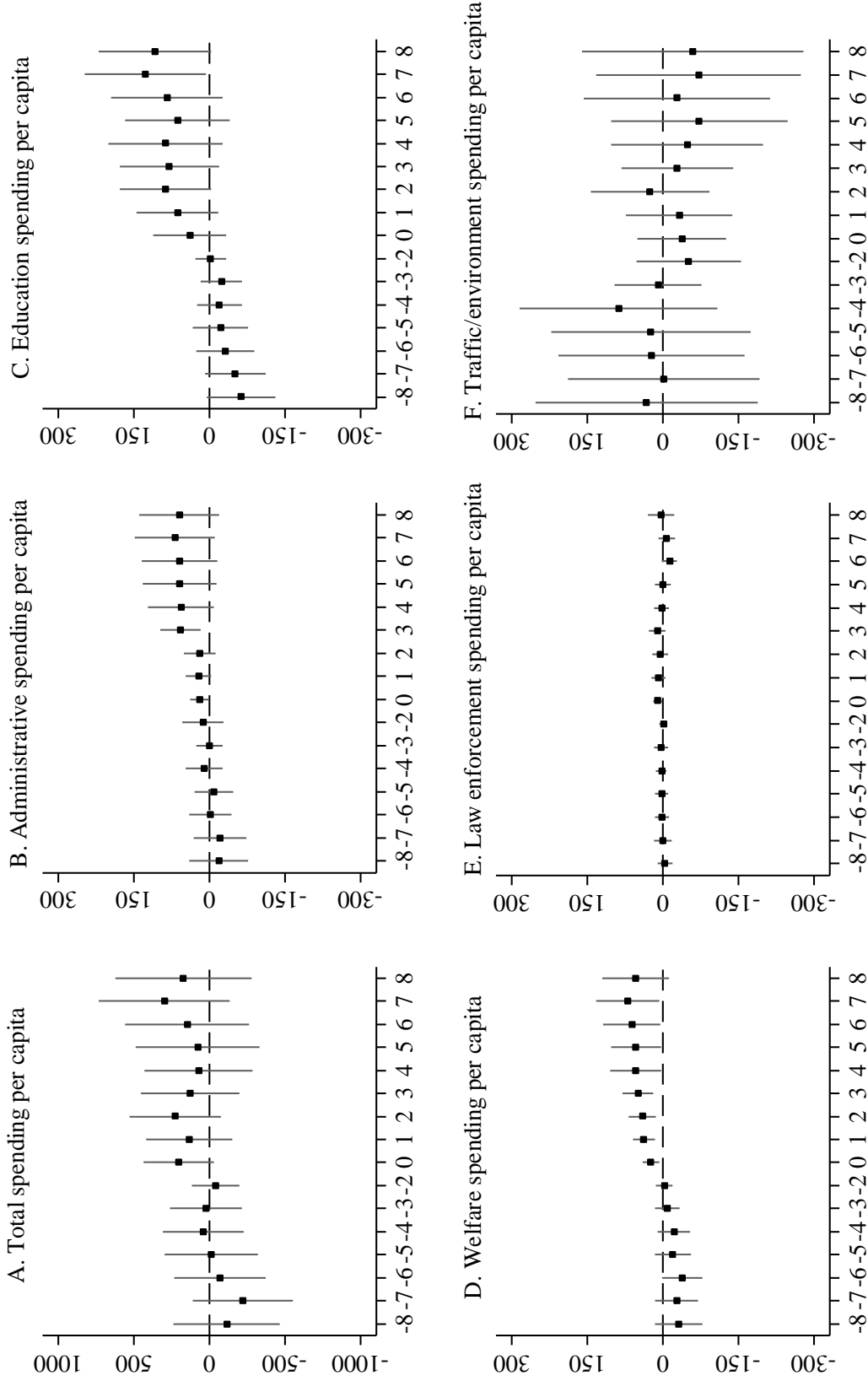
Notes: This figure plots impact estimates of parliament adoption from 8 years prior to adoption to 8 years post-adoption. The base category is the year prior to parliament adoption. The model includes year and commune effects, as well as an indicator for 9 or more years before adoption and one for 9 or more years post-adoption. Bars indicate 95% confidence intervals.

Figure 4: Event study impact estimates on $\ln(\text{spending})$



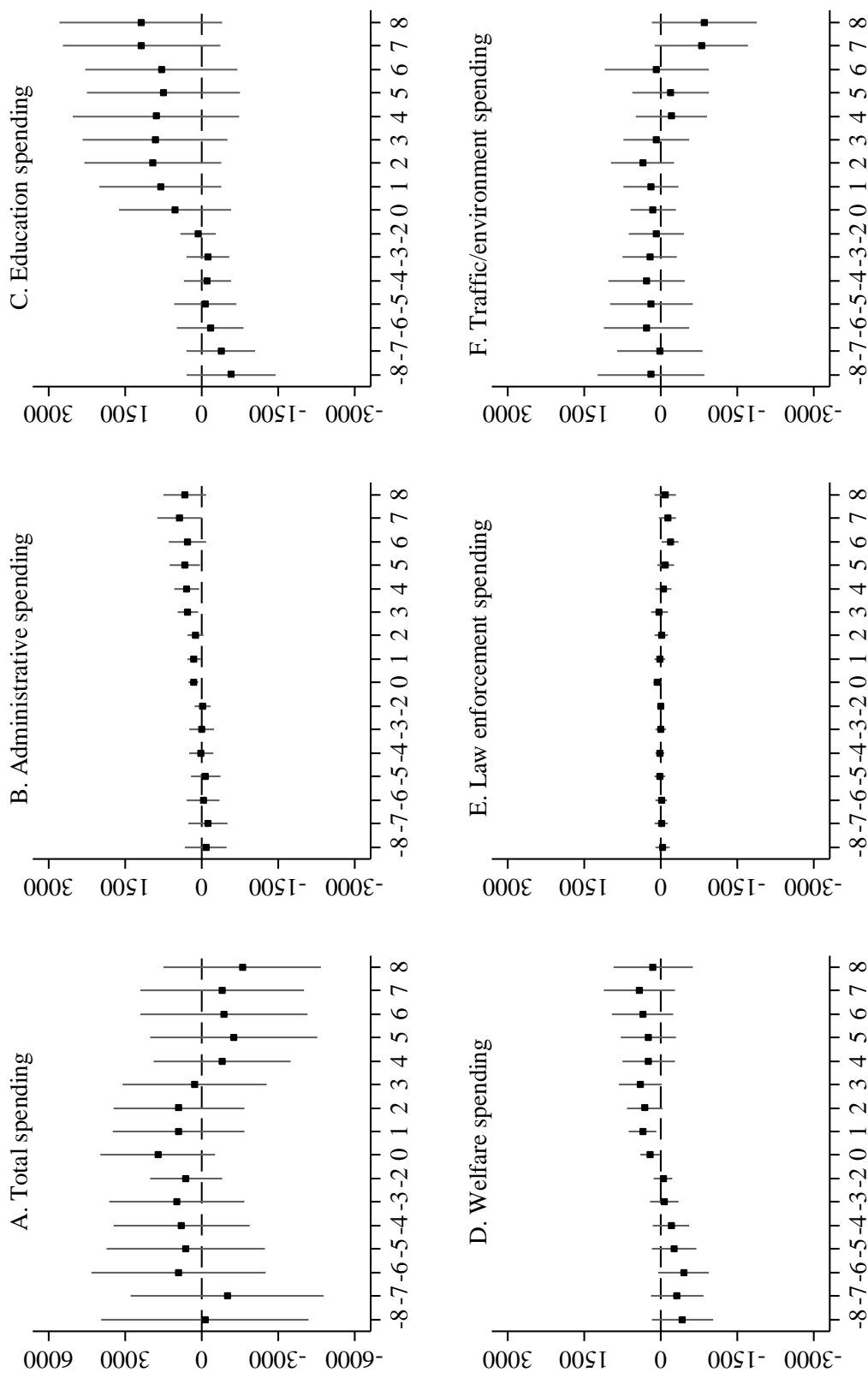
Notes: This figure plots impact estimates of parliament adoption from 8 years prior to adoption to 8 years post-adoption. The base category is the year prior to parliament adoption. The model includes year and commune specific linear trend, as well as an indicator for 9 or more years before adoption and one for 9 or more years post-adoption. Also included are population and demographic controls, as well as structural break dummies. Bars indicate 95% confidence intervals.

Figure 5: Event study impact estimates on spending per capita



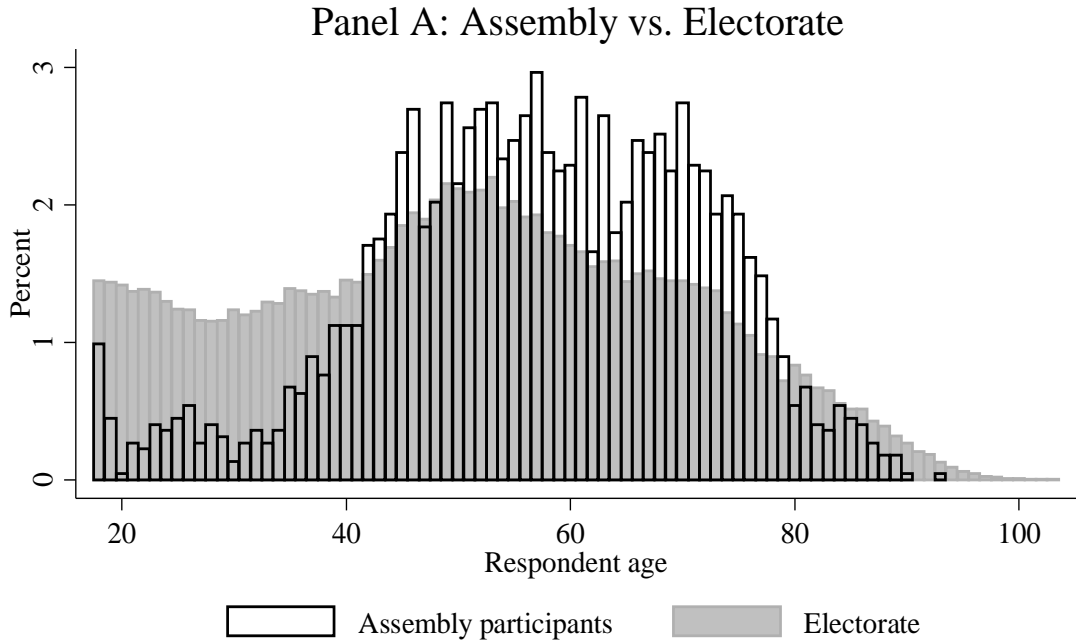
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Figure 6: Event study impact estimates on raw spending (real 2010 Swiss Francs)

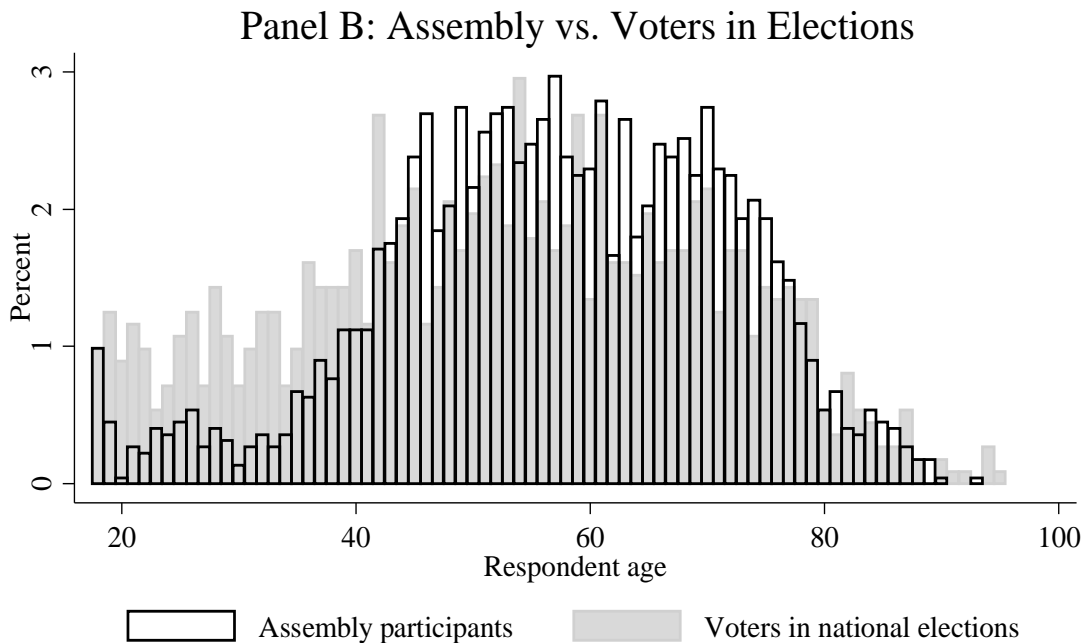


Notes: This figure plots impact estimates of parliament adoption from 8 years prior to adoption to 8 years post-adoption. The base category is the year prior to parliament adoption. The model includes year and commune effects, a commune-specific linear trend, as well as an indicator for 9 or more years before adoption and one for 9 or more years post-adoption. Also included are population and demographic controls, as well as structural break dummies. Bars indicate 95% confidence intervals.

Figure 7: Age of assembly participants, the electorate and voters in canton Zurich communes with assembly participation rates above 70%

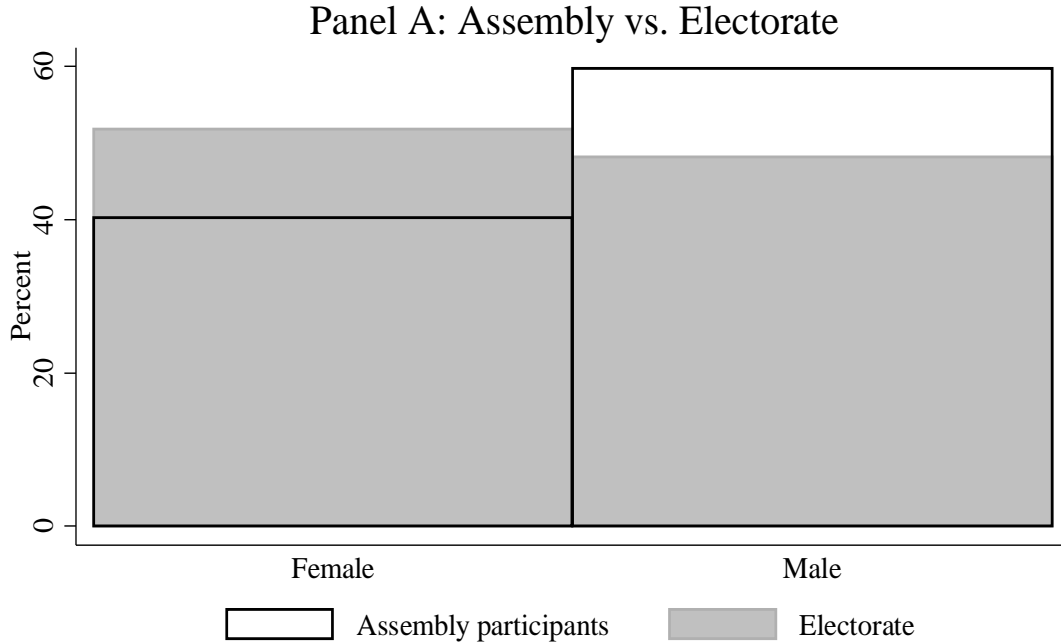


Notes: All respondents are from canton Zurich communes that took part in our 2016 assembly survey and had participation rates above 70%. Assembly participants responded to our survey. The electorate corresponds to Swiss citizens and is based on register data collected by the statistical office of canton Zurich.

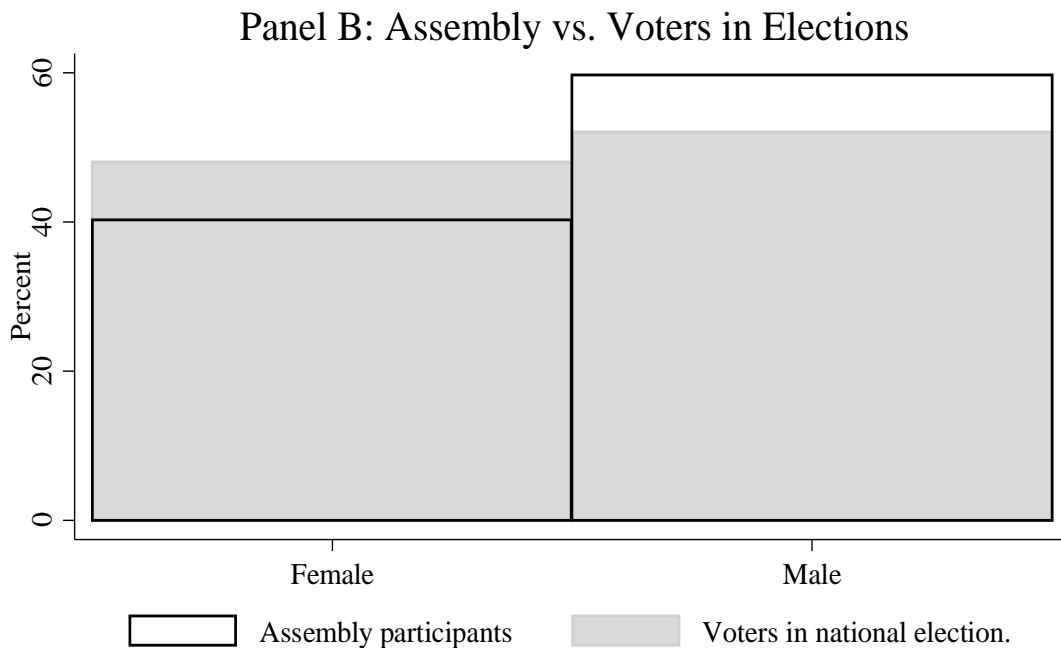


Notes: All respondents are from canton Zurich. Assembly participants are from those communes that took part in our 2016 assembly survey and had participation rates above 70%. Voters in national elections participated in the Swiss Electoral Studies surveys of 2011 or 2015 and are from the entire canton.

Figure 8: Gender of assembly participants, the electorate and voters in canton Zurich communes with assembly participation rates above 70%

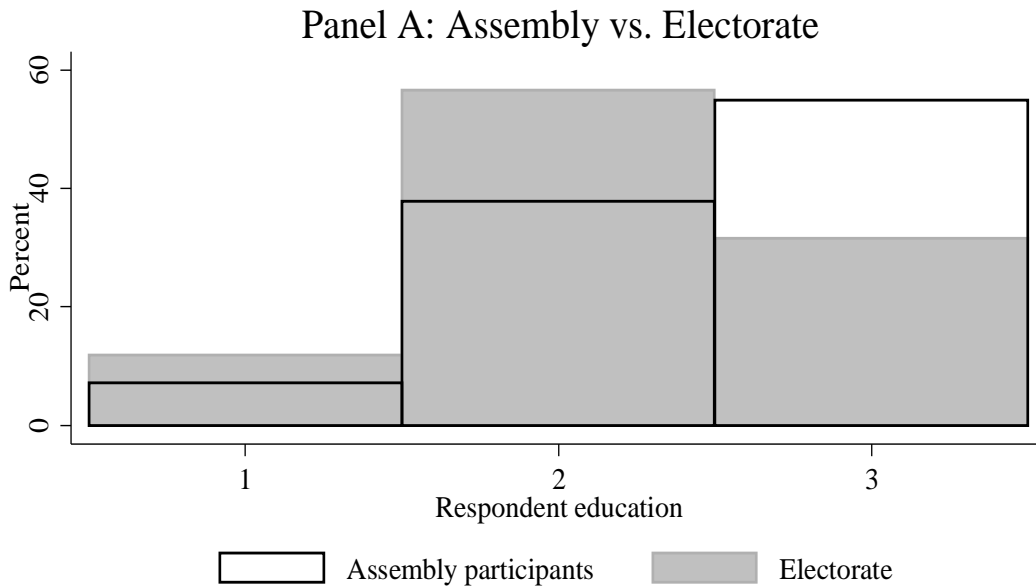


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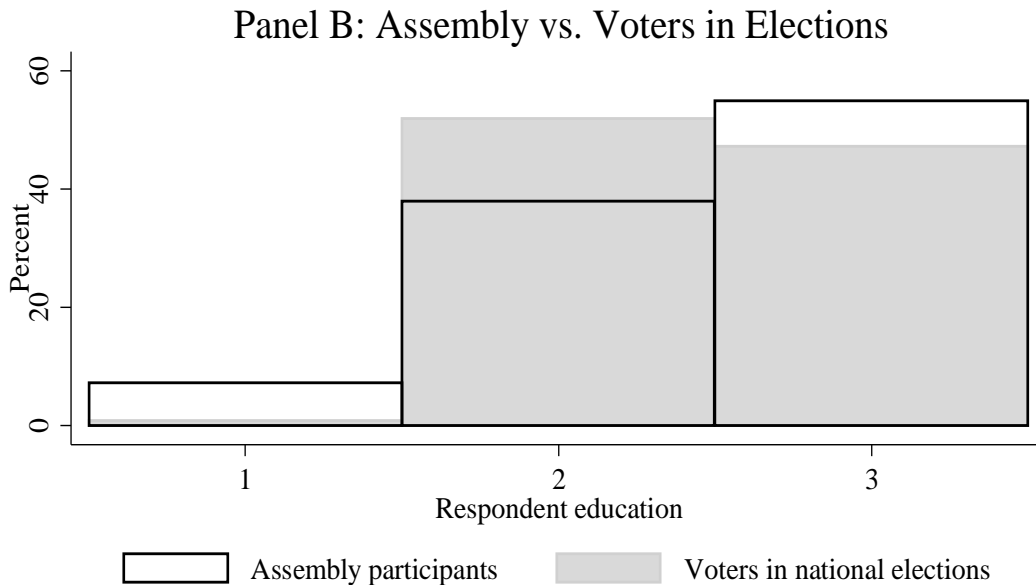


Notes: All respondents are from canton Zurich. Assembly participants are from those communes that took part in our 2016 assembly survey and had participation rates above 70%. Voters in national elections participated in the Swiss Electoral Studies surveys of 2011 or 2015 and are from the entire canton.

Figure 9: Education level of assembly participants, the electorate and voters



Notes: All respondents are from canton Zürich communes that took part in our 2016 assembly survey. Assembly participants responded to our survey. The electorate corresponds to Swiss citizens and is based on survey data collected by the Swiss Federal Statistical Office.
 1: Compulsory education (primary and lower secondary)
 2: Upper secondary education (apprenticeship, vocational baccalaureate, academic baccalaureate)
 3: Tertiary education (university, higher vocational school)



Notes: All respondents are from canton Zürich. Assembly participants are from those communes that took part in our 2016 assembly survey. Voters in national elections participated in the Swiss Electoral Studies surveys of 2011 or 2015 and are from the entire canton.
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 2: Upper secondary education (apprenticeship, vocational baccalaureate, academic baccalaureate)
 3: Tertiary education (university, higher vocational school)